

**SUBCHAPTER H : LICENSING REQUIREMENTS FOR NEAR-SURFACE
LAND DISPOSAL OF RADIOACTIVE WASTE**

§§336.701-336.703, 336.705-336.711, 336.715, 336.716,
336.718-336.737, 336.740-336.743
Effective June 5, 1997

§336.701. Scope and General Provisions.

(a) This subchapter establishes, for near-surface land disposal of radioactive waste, the procedures, criteria, and terms and conditions upon which the commission issues a license for the disposal of radioactive wastes received from other persons. The rules in this subchapter apply to disposal of radioactive waste as defined in §336.2 of this title (relating to Definitions). If there is a conflict between the rules of the commission and the rules of this subchapter, the rules of this subchapter shall prevail. No person may engage in disposal of radioactive waste received from other persons except as authorized in a specific license issued under this subchapter. A licensee under this subchapter may conduct processing of radioactive waste received for disposal at the licensed site, incidental to the disposal of that waste, in accordance with provisions of the commission license which authorizes the disposal.

(b) A licensee authorized to dispose of radioactive waste under the rules in this subchapter shall not accept for disposal:

(1) high-level radioactive waste as defined in 10 CFR 60.2 as amended through October 27, 1988 (53 FedReg 43421) (relating to Definitions - high-level radioactive wastes in geologic repositories);

(2) byproduct material as defined in §336.2, subparagraph (B) of this title, except as provided in subsection (c) of this section;

(3) waste containing transuranic radionuclides in concentrations of 10 or more nanocuries per gram. This limit of 10 nanocuries per gram of transuranics shall not be equaled or exceeded in waste disposed of at a land disposal facility licensed under the rules in this subchapter, notwithstanding the concentration limits for transuranics specified in §336.362, Appendix E, of this title (relating to Classification and Characteristics of Low-Level Radioactive Waste);

(4) spent or irradiated nuclear fuel; or

(5) waste that is not generally acceptable for near-surface disposal as specified in §336.362, Appendix E, of this title.

(c) A licensee authorized to dispose of radioactive waste under the rules in this subchapter may accept in any one calendar year, from January 1 through December 31 of each year, byproduct material as defined in §336.2, subparagraph (B) of this title, in a total quantity not exceeding 10,000 kilograms and containing no more than five millicuries of radium-226, provided that the near-surface disposal license specifically authorizes by license condition the acceptance for disposal of such byproduct material in quantities as provided for in this subsection.

(d) In addition to the requirements of this subchapter, all licensees, unless otherwise specified, are subject to the requirements of Subchapters A-E of Chapter 336 of this title (relating to General Provisions; Radioactive Substance Fees; Additional Application, Operation, and License Requirements; Standards for Protection Against Radiation; and Notices, Instructions, and Reports to Workers and Inspections).

(e) Requirements for disposal of radioactive waste by an individual waste generator are set forth in Subchapter D of Chapter 336 of this title and Subchapter F of Chapter 336 of this title (relating to Licensing of Alternative Methods of Disposal of Radioactive Material), and this disposal is not subject to licensing under this subchapter. Requirements for disposal of byproduct material as defined in §336.2, subparagraph (B) of this title, are set forth in Subchapter G of Chapter 336 of this title (relating to Licensing Requirements for Source Material (Uranium or Thorium) Recovery and Processing Facilities), and this disposal is not subject to licensing under this subchapter, except as provided in subsection (c) of this section.

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§336.702. Definitions.

Terms used in this subchapter are defined in §336.2 of this title (relating to Definitions). Additional terms used in this subchapter have the following definitions:

Active maintenance - Any significant remedial activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives in §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity) and §336.725 of this title (relating to Protection of Individuals from Inadvertent Intrusion) are met. Active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.

Buffer zone - A portion of the disposal site that is controlled by the licensee and that lies under the disposal units and between the disposal units and the boundary of the site.

Chelating agent - A chemical or complex which causes an ion, usually a metal, to be joined in the same molecule by relatively stable bonding, e.g., amine polycarboxylic acids (e.g., EDTA, DTPA), hydroxycarboxylic acids, and polycarboxylic acids (e.g., citric acid, carboic acid, and gluconic acid).

Commencement of major construction - Any clearing of land, excavation, or other substantial action that would adversely affect the environment of a land disposal facility. The term does not mean disposal site exploration, necessary roads for disposal site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the disposal site or the protection of environmental values.

Custodial agency - A government agency designated to act on behalf of the government owner of the disposal site.

Disposal - The isolation of radioactive waste from the biosphere inhabited by man and containing his food chains by emplacement in a land disposal facility.

Disposal site - That portion of a land disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

Disposal unit - A discrete portion of the disposal site into which waste is placed for disposal. For near-surface disposal, the disposal unit is usually a trench.

Engineered barrier - A man-made structure or device that is intended to improve the land disposal facility's ability to meet the performance objectives in this subchapter.

Explosive material - Any chemical compound, mixture, or device which produces a substantial instantaneous release of gas and heat spontaneously or by contact with sparks or flame.

Government agency - Any executive department, commission, independent establishment, or corporation, wholly or partly owned by the United States of America or the State of Texas and which is an instrumentality of the United States or the State of Texas; or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the government.

Hazardous wastes - Those wastes designated as hazardous by United States Environmental Protection Agency rules in 40 CFR Part 261 as amended through July 1, 1996 (61 FedReg 34278) (relating to Identification and Listing of Hazardous Waste).

Hydrogeologic unit - Any soil or rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of groundwater.

Inadvertent intruder - A person who might occupy the disposal site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which the person might be unknowingly exposed to radiation from the waste.

Intruder barrier - A sufficient depth of cover over the waste that inhibits contact with waste and helps to ensure that radiation exposures to an inadvertent intruder meet the performance objectives set forth in this subchapter, or engineered structures that provide equivalent protection to the inadvertent intruder.

Monitoring - Observing and making measurements to provide data to evaluate the performance and characteristics of the disposal site.

Pyrophoric material -

(A) Any liquid that ignites spontaneously in dry or moist air at or below 130 degrees Fahrenheit (54.5 degrees Celsius); or

(B) Any solid material, other than one classed as an explosive, which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which

can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling, or disposal hazard. Included are spontaneously combustible and water-reactive materials.

Reconnaissance-level information - Any information or analysis that can be retrieved or generated without the performance of new comprehensive site-specific investigations. Reconnaissance-level information includes but is not limited to relevant published scientific literature; drilling records required by the commission or other state agencies, such as the Railroad Commission of Texas and the Texas Natural Resources Information System; and reports of governmental agencies.

Site closure and stabilization - Those actions that are taken upon completion of operations that prepare the disposal site for custodial care and that assure that the disposal site remain stable and not need ongoing active maintenance.

Stability - Structural stability.

Surveillance - Observation of the disposal site for purposes of visual detection of need for maintenance, custodial care, evidence of intrusion, and compliance with other license and regulatory requirements.

Waste - Radioactive waste, or low-level radioactive waste, as defined in §336.2 of this title (relating to Definitions) which is acceptable for disposal in a land disposal facility. Notwithstanding the definitions in §336.2 of this title, the term "waste" as used in this subchapter includes transuranics in concentrations less than 10 nanocuries per gram, as provided in §336.701(b)(3) of this title (relating to Scope and General Provisions), and byproduct material which meets the limitations of §336.701(c) of this title.

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§336.703. License Required.

No person may receive, possess, or dispose of waste from other persons at a near-surface land disposal facility unless authorized by a license issued by the commission under this subchapter.

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§336.705. Content of Application.

An application for a license to receive, possess, and dispose of waste from other persons by near-surface land disposal shall consist of, but is not limited to, the information set forth in §336.706 of this title (relating to General Information), §336.707 of this title (relating to Specific Technical Information), §336.708 of this title (relating to Environmental Information), §336.709 of this title (relating to Technical and Environmental Analyses), §336.710 of this title (relating to Institutional Information), and §336.711 of this title (relating to Financial Information).

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§336.706. General Information.

(a) The general information in the application shall include each of the following:

(1) identity of the applicant, including:

(A) the full name, address, telephone number, and description of the business or occupation of the applicant;

(B) if the applicant is a partnership, the name and address of each partner and the principal location where the partnership does business;

(C) if the applicant is a corporation or an unincorporated association,

(i) the state where it is incorporated or organized and the principal location where it does business; and

(ii) the names and addresses of its directors and principal officers; and

(D) if the applicant proposes to contract the management of the construction and/or operation of the disposal facility to another person, the full name, address, and telephone number of the management contractor, the full name and address of each principal, partner, or director of the contractor, the state where it is organized, and the principal location where it does business.

(2) qualifications of the applicant, including:

(A) the organizational structure of the applicant, both offsite and onsite, including a description of lines of authority and assignments of responsibilities, whether in the form of administrative directives, contract provisions, or otherwise;

(B) the technical qualifications, including training and experience, of the applicant and members of the applicant's staff to engage in the proposed activities. Minimum training and experience requirements for personnel filling key positions described in subparagraph (A) of this paragraph shall be provided;

(C) a description of the applicant's personnel training program; and

(D) the plan to maintain an adequate complement of trained personnel to carry out waste receipt, handling, and disposal operations in a safe manner. Those plans should include provisions for operating the facility in the event of unavailability of any contracted services or equipment.

(3) a description of:

(A) the location of the proposed disposal site;

(B) the general character of the proposed activities;

(C) the types and quantities of waste to be received, possessed, and disposed of;

(D) plans for use of the land disposal facility for purposes other than disposal of waste; and

(E) the proposed facilities and equipment.

(4) proposed schedules for construction, receipt of waste, and first emplacement of waste at the proposed land disposal facility.

(5) proposed insurance to be obtained by the applicant to cover potential injury to any property or person, including potential injury from risks relating to transportation.

(b) If the applicant is acting as an agent or representative of another person in filing the application, all information required under this section shall be supplied with respect to the other person.

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§336.707. Specific Technical Information.

The specific technical information in the application shall include the following information needed for demonstration that the performance objectives of this subchapter and the applicable technical requirements of this subchapter will be met:

(1) a description of the principal design criteria and their relationship to the performance objectives;

(2) a description of the design basis natural events or phenomena and their relationship to the principal design criteria;

(3) a description of codes and standards which the applicant has applied to the design and which will apply to construction of the land disposal facilities;

(4) a description of the design features of the land disposal facility and the disposal units. For near-surface disposal, the description shall include those design features related to infiltration of water; integrity of covers for disposal units; structural stability of backfill, wastes, and covers; contact of wastes with standing water; disposal site drainage; disposal site closure and stabilization; elimination to the extent practicable of long-term disposal site maintenance; inadvertent intrusion; occupational exposures; disposal site monitoring; and adequacy of the size of the buffer zone for monitoring and potential mitigative measures;

(5) a description of the construction and operation of the land disposal facility. The description shall include, as a minimum, the methods of construction of disposal units; waste emplacement; the procedures for and areas of waste segregation; accurate drawings and descriptions of on-site buildings including, but not limited to, construction, foundation details, ventilation, plumbing and fire suppression systems, and proximity to creeks or culverts; types of intruder barriers; onsite traffic and drainage systems; physical security system; survey control program; methods and areas of waste storage; facilities for and methods of processing waste including improperly packaged shipments; and methods to control surface water and groundwater access to the wastes. The description shall also include the methods to be employed in the

handling and disposal of wastes containing chelating agents or other nonradiological substances that might affect meeting the performance objectives of this subchapter;

(6) a description of the types, chemical and physical forms, quantities, classification, and specifications of the radioactive material proposed to be received, possessed, processed, and disposed of at the land disposal facility. This description shall include performance criteria for form and packaging of the waste to be received;

(7) a description of the quality assurance program, tailored to disposal of low-level radioactive waste, developed and applied by the applicant for the determination of natural disposal site characteristics and for quality assurance during the design, construction, operation, and closure of the land disposal facility and during the receipt, handling, and emplacement of waste;

(8) a description of the radiation safety program for control and monitoring of radioactive effluents to ensure compliance with the performance objective in §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity) and occupational radiation exposure to ensure compliance with the requirements of Subchapter D of Chapter 336 of this title (relating to Standards for Protection Against Radiation) and to control contamination of personnel, vehicles, equipment, buildings, and the disposal site. Both routine operations and accidents shall be addressed. The program description shall include procedures, instrumentation, facilities, and equipment;

(9) an Operating and Emergency Procedures Manual that shall provide detailed procedures for receiving, handling, storing, processing, and disposal of waste. Emergency procedures shall include a spill detection and cleanup program for the site and associated transportation of waste;

(10) a description of the administrative procedures that the applicant must apply to control activities at the land disposal facility, including hours of proposed operation; and

(11) a description of the facility electronic recordkeeping system as required in §336.740(i) of this title (relating to Maintenance of Records and Reports).

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§336.708. Environmental Information.

The application shall include site-specific environmental information (or reconnaissance-level information when appropriate) which addresses and quantifies to the extent practicable the following:

(1) a statement of need and a description of the proposed activities identifying the location of the proposed site, the character of the proposed activities, and any plans for use of the facility for purposes other than processing and disposal of waste;

(2) proposed time schedules for construction, receipt, processing, and disposal of waste at the proposed facility;

(3) area and site characteristics including ecology, geology (including geotechnical features), seismology, geochemistry, soils, topography, hydrology, air quality, natural radiation background, meteorology, climatology, historical and cultural landmarks, archaeology, demography, and current land uses;

(4) an identification of the known natural resources at the disposal site, whose exploitation could result in inadvertent intrusion into the wastes after removal of active institutional control;

(5) a flow diagram of waste processing and disposal operations, a description and accurate drawings of processing equipment, and any special handling techniques to be employed;

(6) site selection process, including considerations of the interrelationships between location of waste generators, transportation costs and means, site characteristics, and compatibility with current land uses;

(7) project alternatives, including a discussion of the alternatives considered by the applicant for processing and disposal of waste;

(8) radiological and nonradiological impacts of the proposed action, including:

(A) surface and groundwater impacts;

(B) socioeconomic impacts;

(C) short- and long-term impacts on public health and safety; and

(D) impacts resulting from irreversible or irretrievable commitments of resources;

(9) environmental effects of postulated operational and transportation accidents;

(10) a description of baseline, operational, and long-term environmental monitoring programs, including radioactive and chemical characteristics, and the plan for taking corrective measures if migration of radionuclides or chemical constituents is indicated;

(11) decommissioning and site closure plans, including those design features which are intended to facilitate disposal site closure and to eliminate the need for ongoing active maintenance; and

(12) a list of all governmental permits, licenses, approvals, and other entitlements obtained in connection with the proposed action.

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§336.709. Technical and Environmental Analyses.

The specific technical and environmental information in the application shall also include the following analyses needed to demonstrate that the performance objectives of this subchapter will be met:

(1) Pathways analyzed in demonstrating protection of the general population from releases of radioactivity shall include air, soil, groundwater, surface water, plant uptake, and exhumation by animals. The analyses shall clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses shall clearly demonstrate that there is reasonable assurance that the exposures to humans from the release of radioactivity will not exceed the limits set forth in §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity).

(2) Analyses of the protection of individuals from inadvertent intrusion shall include demonstration that there is reasonable assurance that the waste classification and segregation requirements will be met and that adequate barriers to inadvertent intrusion will be provided.

(3) Analyses of the protection of individuals during operations shall include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The analyses shall provide reasonable assurance that exposures will be controlled to meet the requirements of Subchapter D of Chapter 336 of this title (relating to Standards for Protection Against Radiation).

(4) Analyses of the long-term stability of the disposal site and the need for ongoing active maintenance after closure shall be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, infiltration through covers over disposal units and adjacent soils, and surface drainage of the disposal site. The analyses shall provide reasonable assurance that there will not be a need for ongoing active maintenance of the disposal site following closure.

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§336.710. Institutional Information.

The institutional information in the application shall include:

(1) a certification by the State or federal government which will own the disposal site that the State or federal government is prepared to accept transfer of the license when the provisions of §336.721 of this title (relating to Transfer of License to Custodial Agency) are met and will assume responsibility for custodial care after site closure and post-closure observation and maintenance;

(2) evidence that arrangements have been made for assumption of ownership in fee by the State or federal government before the commission issues a license where the proposed disposal site is on land not owned by the State or federal government;

(3) a description of the ownership of the land and fixtures that are part of the proposed disposal site. A plat plan describing the site and identifying the ownership of the surface and subsurface estates must be included. Where portions of the site have been leased or will be leased to others, the terms of the lease agreement must be described; and

(4) a description of the contractual terms and conditions of any agreement for the management or operation of the proposed disposal site.

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§336.711. Financial Information.

The financial information in the application shall be sufficient to demonstrate that the financial qualifications of the applicant are adequate to carry out the activities for which the license is sought and meet other financial assurance requirements of this subchapter.

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§336.715. Standards for Issuance of a License, License Amendment, or License Renewal.

A license, license amendment, or license renewal for the receipt, possession, and disposal of waste may be issued by the commission upon finding that the issuance of the license must not constitute an unreasonable risk to the health and safety of the public or have a long-term detrimental impact on the environment and that:

(1) The applicant is qualified by reason of training and experience to carry out the disposal operations requested in a manner that protects health and minimizes danger to life or the environment;

(2) The applicant's proposed disposal site, disposal design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and post-closure institutional control are adequate to protect the public health and safety in that they provide reasonable assurance that the general population will be protected from releases of radioactivity as specified in the performance objective in §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity);

(3) The applicant's proposed disposal site, disposal site design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and post-closure institutional control are adequate to protect the public health and safety in that they will provide reasonable assurance that individual inadvertent intruders are protected in accordance with the performance objective in §336.725 of this title (relating to Protection of Individuals from Inadvertent Intrusion);

(4) The applicant's proposed land disposal facility operations (including equipment, facilities, and procedures) are adequate to protect the public health and safety in that they will provide reasonable assurance that the standards for radiation protection set out in Subchapter D of Chapter 336 of this title (relating to Standards for Protection Against Radiation) will be met;

(5) The applicant's proposed disposal site, disposal site design, land disposal facility operations, disposal site closure, and post-closure institutional control are adequate to protect the public health and safety and the environment in that they will provide reasonable assurance that long-term stability of the disposed waste and the disposal site will be achieved and will eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure;

(6) The applicant has provided reasonable assurance that the applicable technical requirements of this subchapter will be met;

(7) The applicant's proposal for institutional control provides reasonable assurance that institutional control will be provided for the length of time found necessary to ensure the findings in paragraphs (2)-(5) of this section and that the institutional control meets the requirements of §336.734 of this title (relating to Institutional Requirements);

(8) The information on financial assurances meets the requirements of this subchapter; and

(9) The applicant has met any additional requirements under the rules of the commission.

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§336.716. Terms and Conditions of License.

(a) At any time before termination of the license, the licensee shall submit written statements under oath upon request of the commission or executive director to enable the commission to determine whether or not the license should be modified, suspended, or revoked.

(b) The license will be transferred to the custodial agency only on the full implementation of the final closure plan as approved by the commission, including post-closure observation and maintenance.

(c) The licensee shall be subject to the applicable provisions of the Texas Radiation Control Act (TRCA) now or hereafter in effect and to applicable rules and orders of the commission. The terms and conditions of the license are subject to amendment, revision, or modification, by reason of amendments to the TRCA or by reason of rules and orders issued in accordance with terms of the TRCA.

(d) Any license may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or any statement of fact required under provisions of the TRCA, or because of conditions revealed by any application or statement of fact or any report, record, or inspection or other means that would warrant the commission to refuse to grant a license on the original application, or for failure to operate the facility in accordance with the terms of the license, or for any violation of or failure to observe any of the terms and conditions of the TRCA or the license or of any rule order of the commission.

(e) Each person licensed by the commission under this subchapter shall confine possession and use of radioactive materials to the locations and purposes authorized in the license.

(f) No waste may be disposed of until the executive director has inspected the land disposal facility and has found it to be in conformance with the description, design, and construction described in the application for a license.

(g) The commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule or order, additional requirements and conditions with respect to the licensee's receipt, possession, and disposal of waste as it deems appropriate or necessary in order to:

(1) protect the health and safety of the public and the environment; and

(2) require reports and recordkeeping and to provide for inspections of activities under the license that may be necessary or appropriate to effectuate the purposes of the TRCA and rules thereunder.

(h) Each license shall be issued for a fixed period of time to be specified in the license but in no case to exceed 20 years from the date of issuance. The authority to dispose of waste expires on the date stated in the license except as provided in §336.718(a) of this title (relating to Application for Renewal or Closure).

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§336.718. Application for Renewal or Closure.

(a) Any expiration date on a license applies only to the above ground activities and to the authority to dispose of waste. Failure to renew the license shall not relieve the licensee of responsibility for completing site closure, post-closure observation, and transfer of the license to the custodial agency. An application for renewal or an application for closure under §336.719 of this title (relating to Content of Application for Closure) shall be filed at least 30 days before license expiration.

(b) Applications for renewal of a license shall be filed in accordance with §336.705 of this title (relating to Content of Application), §336.706 of this title (relating to General Information), §336.707 of this title (relating to Specific Technical Information), §336.708 of this title (relating to Environmental Information), §336.709 of this title (relating to Technical and Environmental Analyses), §336.710 of this title (relating to Institutional Information), §336.711 of this title (relating to Financial Information) and the rules of the commission. Applications for closure shall be filed in accordance with §336.719 of this title (relating to Content of Application for Closure) and the rules of the commission.

(c) In any case in which a licensee has timely filed an application for renewal of a license, the license for continued receipt and disposal of licensed materials shall not expire until the commission has taken final action on the application for renewal.

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§336.719. Content of Application For Closure.

(a) Before final closure of the disposal site, or as otherwise directed by the commission, the applicant shall submit an application to amend the license for closure. This closure application shall include a final revision and specific details of the disposal site closure plan included as part of the license application submitted under §336.708(11) of this title (relating to Environmental Information) that includes each of the following:

(1) any additional geological, geochemical, hydrological, or other disposal site data obtained during the operational period pertinent to the long-term containment of emplaced wastes;

(2) the results of tests, experiments, or any other analyses relating to backfill of excavated areas, closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analyses pertinent to the long-term containment of emplaced waste within the disposal site;

(3) any proposed revision of plans for:

(A) decontamination and/or dismantlement of surface facilities;

(B) backfilling of excavated areas; or

(C) stabilization of the disposal site for post-closure care; and

(4) any significant new information regarding the environmental impact of closure activities and long-term performance of the disposal site.

(b) Upon review and consideration of an application to amend the license for closure submitted in accordance with subsection (a) of this section, the commission may issue an amendment authorizing closure if there is reasonable assurance that the long-term performance objectives of this subchapter will be met.

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§336.720. Post-closure Observation and Maintenance.

Following completion of closure authorized in §336.719 of this title (relating to Content of Application for Closure), the licensee shall observe, monitor, and carry out necessary maintenance and repairs at the disposal site until the site closure is complete and the license is transferred by the commission in accordance with §336.721 of this title (relating to Transfer of License to Custodial Agency). Responsibility for the disposal site shall be maintained by the licensee for five years. A shorter or longer time period for post-closure observation and maintenance may be established and approved as part of the site closure plan, based on site-specific conditions.

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§336.721. Transfer of License to Custodial Agency.

Following closure and the period of post-closure observation and maintenance, the licensee may apply for an amendment to transfer the license to the custodial agency. The license may be transferred when the commission finds that:

(1) The closure of the disposal site has been made in conformance with the licensee's disposal site closure plan, as amended and approved as part of the license;

(2) Reasonable assurance has been provided by the licensee that the performance objectives of this subchapter are met;

(3) Any funds and necessary records for care shall be transferred to the custodial agency;

(4) The post-closure monitoring program is operational for implementation by the custodial agency; and

(5) The State or federal government agency (custodial agency) which will assume responsibility for institutional control of the disposal site is prepared to assume responsibility and ensure that the institutional requirements found necessary under §336.715(7) of this title (relating to Standards for Issuance of a License, License Amendment, or License Renewal) will be met.

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§336.722. Termination of License.

(a) Following any period of institutional control needed to meet the requirements found necessary under §336.715 of this title (relating to Standards for Issuance of a License, License Amendment, or License Renewal), the licensee (custodial agency) may apply for an amendment to terminate the license.

(b) This application shall be filed, and reviewed, in accordance with applicable provisions of Chapter 305 of this title (relating to Consolidated Permits).

(c) A license may be terminated only when the commission finds that:

(1) The institutional control requirements found necessary under §336.715(7) of this title have been met; and

(2) Any additional requirements resulting from new information developed during the institutional control period have been met and that permanent monuments or markers warning against intrusion have been installed.

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§336.723. General Requirement.

Land disposal facilities shall be sited, designed, operated, closed, and controlled after closure so that reasonable assurance exists that exposures to humans are within the limits established in the performance objectives in §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity), §336.725 of this title (relating to Protection of Individuals from Inadvertent Intrusion), §336.726 of this title (relating to Protection of Individuals during Operations), and §336.727 of this title (relating to Stability of the Disposal Site after Closure).

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§336.724. Protection of the General Population from Releases of Radioactivity.

Concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals shall not result in an annual dose above background exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, or 25 millirems to any other organ of any member of the public. Effort shall be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.

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§336.725. Protection of Individuals from Inadvertent Intrusion.

Design, operation, and closure of the land disposal facility shall ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed.

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Effective June 5, 1997

§336.726. Protection of Individuals during Operations.

Operations at the land disposal facility shall be conducted in compliance with the standards for radiation protection set out in Subchapter D of Chapter 336 of this title (relating to Standards for Protection Against Radiation), except for releases of radioactivity in effluents from the land disposal facility, which shall be governed by §336.724 of this title (relating to Protection of the General Population from Releases of Radioactivity). Effort shall be made to maintain radiation exposures as low as is reasonably achievable.

Adopted May 14, 1997

Effective June 5, 1997

§336.727. Stability of the Disposal Site after Closure.

The disposal facility shall be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site and to eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required.

Adopted May 14, 1997

Effective June 5, 1997

§336.728. Disposal Site Suitability Requirements for Near-Surface Land Disposal.

- (a) The disposal site shall be capable of being characterized, modeled, analyzed, and monitored.
- (b) Within the region where the facility is to be located, a disposal site should be selected so that projected population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives of this subchapter.
- (c) Areas shall be avoided that have known natural resources which, if exploited, would result in failure to meet the performance objectives of this subchapter.
- (d) The disposal site shall be generally well drained and free of areas of flooding or frequent ponding. Waste disposal shall not take place in a 100-year flood plain, coastal high-hazard area, or wetland, as defined in Executive Order 11988, "Floodplain Management Guidelines."
- (e) Upstream drainage areas shall be minimized to decrease the amount of runoff which could erode or inundate disposal units.

(f) The disposal site shall provide sufficient depth to the water table so that groundwater, perennial or otherwise, shall not intrude into the waste.

(g) Areas shall be avoided that are the recharge areas of sole source aquifers unless it can be demonstrated with reasonable assurance that the disposal site shall be designed, constructed, operated, and closed without an unreasonable risk to an aquifer.

(h) The hydrogeologic unit used for disposal shall not discharge groundwater to the surface within the disposal site.

(i) Areas shall be avoided where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of this subchapter or may preclude defensible modeling and prediction of long-term impacts.

(j) Areas shall be avoided where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of this subchapter or may preclude defensible modeling and prediction of long-term impacts.

(k) The disposal site shall not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of this subchapter or significantly mask the environmental monitoring program.

(l) The disposal site shall not be located in areas where soil conditions are such that spill cleanup would be impracticable.

Adopted May 14, 1997

Effective June 5, 1997

§336.729. Disposal Site Design For Near-Surface Land Disposal.

(a) Site design features shall be directed toward long-term isolation and avoidance of the need for continuing active maintenance after site closure.

(b) The disposal site design and operation shall be compatible with the disposal site closure plan and lead to disposal site closure that provides reasonable assurance that the performance objectives of this subchapter will be met.

(c) The disposal site shall be designed to complement and improve, where appropriate, the ability of the disposal site's natural characteristics to assure that the performance objectives of this subchapter will be met.

(d) Covers shall be designed to minimize water infiltration, to direct percolating or surface water away from the disposed waste, and to resist degradation by surface geologic processes and biotic activity.

(e) Surface features shall direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance.

(f) The disposal site shall be designed to minimize the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal.

Adopted May 14, 1997

Effective June 5, 1997

§336.730. Near-Surface Land Disposal Facility Operation and Disposal Site Closure.

(a) Wastes designated as Class A under §336.362(a), Appendix E of this title (relating to Classification and Characteristics of Low-Level Radioactive Waste) shall be segregated from other wastes by placing the Class A wastes in disposal units which are sufficiently separated from disposal units for the other waste classes so that any interaction between Class A wastes and other wastes shall not result in the failure to meet the performance objectives of this subchapter. This segregation is not necessary for Class A wastes if they meet the stability requirements in §336.362(b)(2), of this title.

(b) Wastes designated as Class C under §336.362(a) of this title shall be disposed of so that the top of the waste is a minimum of five meters below the top surface of the cover or shall be disposed of with intruder barriers that are designed to protect against an inadvertent intrusion for at least 500 years.

(c) Wastes shall be emplaced in a manner that maintains the package integrity during emplacement, minimizes the void spaces between packages, and permits the void spaces to be filled.

(d) Void spaces between waste packages shall be filled with earth or other material to reduce future subsidence within the fill.

(e) Waste shall be placed and covered in a manner that limits the radiation dose rate at the surface of the cover to levels that at a minimum will permit the licensee to comply with all provisions of §336.313 of this title (relating to Dose Limits for Individual Members of the Public) and §336.314 of this title (relating to Compliance with Dose Limits for Individual Members of the Public) at the time the license is transferred under §336.721 of this title (relating to Transfer of License to Custodial Agency).

(f) The boundaries and locations of each disposal unit shall be accurately located and mapped by means of land survey. Disposal units shall be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, shall be established on the site to facilitate surveys. The USGS or NGS control stations shall provide horizontal and vertical controls as checked against USGS or NGS record files.

(g) A buffer zone of land shall be maintained between any buried waste and the disposal site boundary and beneath the disposed waste. The buffer zone shall be of adequate dimensions to carry out environmental monitoring activities specified in §336.731(c) of this title (relating to Environmental Monitoring) and to take mitigative measures if needed.

(h) Closure and stabilization measures as set forth in the approved site closure plan shall be carried out as each disposal unit is filled and covered.

(i) Active waste disposal operations shall not have an adverse effect on completed closure and stabilization measures.

(j) Only wastes containing or contaminated with radioactive materials shall be disposed of at the disposal site.

Adopted May 14, 1997

Effective June 5, 1997

§336.731. Environmental Monitoring.

(a) A pre-operational monitoring program shall be conducted to provide basic environmental data on the disposal site characteristics. For those characteristics that are subject to seasonal variation, data must cover at least a 12-month period.

(b) During the land disposal facility site construction and operation, the licensee shall maintain a monitoring program. Measurements and observations shall be made and recorded to provide data to evaluate the potential health and environmental impacts during both the construction and the operation of the facility and to enable the evaluation of long-term effects and the need for mitigative measures. The monitoring system shall be capable of providing early warning of releases of radionuclides and chemical constituents before they leave the disposal site boundary.

(c) After the disposal site is closed, the licensee responsible for postoperational surveillance of the disposal site shall maintain a monitoring system based on the operating history and the closure and stabilization of the disposal site. The monitoring system shall be capable of providing early warning of releases of radionuclides and chemical constituents before they leave the disposal site boundary.

(d) The licensee shall have a plan for taking corrective measures if migration of radionuclides and chemical constituents would indicate that the performance objectives of this subchapter may not be met.

Adopted May 14, 1997

Effective June 5, 1997

§336.732. Alternative Requirements For Design and Operations.

The commission may, upon request or on its own initiative, authorize provisions other than those set forth in §336.729 of this title (relating to Disposal Site Design for Near-Surface Land Disposal), §336.730 of this title (relating to Near-Surface Land Disposal Facility Operation and Disposal Site Closure), and §336.731 of this title (relating to Environmental Monitoring) for the segregation and disposal of waste and for the design and operation of a land disposal facility on a specific basis, if it finds reasonable assurance of compliance with the performance objectives of this subchapter.

Adopted May 14, 1997

Effective June 5, 1997

§336.733. Waste Classification, Characteristics, and Labeling.

(a) Waste received for disposal by the licensee shall be classified in accordance with §336.362(a), Appendix E of this title (relating to Classification and Characteristics of Low-Level Radioactive Waste), shall meet the applicable characteristics of §336.362(b) of this title, and shall be labeled in accordance with §336.362(c) of this title.

(b) The special criteria specified in this subsection shall apply to the disposal of wastes consisting of radionuclides with half-lives greater than 35 years and wastes consisting of transuranic radionuclides which are acceptable for disposal under this subchapter, that is, transuranic radionuclides in concentrations of less than 10 nanocuries/gram. All those wastes that are determined to be Class A shall be placed in reinforced concrete canisters or equivalent containment structures to provide stability after disposal or shall meet the stability requirements set forth in §336.362(b)(2) of this title. These special criteria are in addition to the minimum requirements for Class A wastes set forth in §336.362(b)(1) of this title.

Adopted May 14, 1997

Effective June 5, 1997

§336.734. Institutional Requirements.

(a) Disposal of waste received from other persons may be permitted only on land owned in fee by the State or the federal government.

(b) The custodial agency shall carry out an institutional control program to physically control access to the disposal site following transfer of control of the disposal site from the disposal site operator. The institutional control program shall also include, but not be limited to, carrying out an environmental monitoring program at the disposal site, periodic surveillance, minor custodial care, and other requirements as determined by the commission or executive director, and administration of funds to cover the costs for these activities. The period of institutional control shall be determined by the commission but may not be relied upon for more than 100 years following transfer of control of the disposal site to the custodial agency.

Adopted May 14, 1997

Effective June 5, 1997

§336.735. Applicant Qualifications and Assurances.

The applicant shall show that it either possesses the necessary funds or has reasonable assurance of obtaining the necessary funds, or by a combination of the two, to cover the estimated costs of conducting all licensed activities over the planned operating life of the project, including costs of construction and disposal.

Adopted May 14, 1997

Effective June 5, 1997

§336.736. Funding for Disposal Site Closure and Stabilization.

(a) The applicant shall provide assurance before the commencement of operations that sufficient funds will be available to carry out disposal site closure and stabilization, including:

- (1) decontamination or dismantlement of land disposal facility structures; and

(2) closure and stabilization of the disposal site so that, following transfer of the disposal site to the custodial agency, the need for ongoing active maintenance is eliminated to the extent practicable and only minor custodial care, surveillance, and monitoring are required.

(b) The assurance shall be based on cost estimates approved by the executive director which reflect the commission-approved plan for disposal site closure and stabilization. The applicant's cost estimates shall take into account total costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work.

(c) The licensee's surety mechanism shall be reviewed annually by the executive director to assure that sufficient funds are available for completion of the closure plan, assuming that the work has to be performed by an independent contractor.

(d) The amount of surety liability should change in accordance with the predicted cost of future closure and stabilization. Factors affecting cost estimates for closure and stabilization include inflation, increases in the amount of disturbed land, changes in engineering plans, closure and stabilization that have already been accomplished, and any other conditions affecting costs. This shall yield a surety that is at least sufficient at all times to cover the costs of closure of the disposal units that are expected to be used before the next annual review.

(e) Financial assurance mechanisms submitted to comply with this section shall meet the requirements specified in Subchapter I of Chapter 336 of this title (relating to Financial Assurance).

Adopted May 14, 1997

Effective June 5, 1997

§336.737. Funding for Institutional Control.

(a) The licensee shall pay into the Radiation and Perpetual Care Fund an amount determined by the executive director to be adequate to provide surveillance, monitoring, any required maintenance, and other care of the disposal site on a continuing basis during the institutional control period.

(b) During the term of the license before the institutional control period, the licensee shall provide the total amount of required funding by means approved by the executive director, such as a combination of periodic payments into the fund and financial assurance covering the remainder of the total amount. Financial assurance mechanisms shall meet the requirements of Subchapter I of Chapter 336 of this title (relating to Financial Assurance).

(c) The executive director shall review annually the amount paid into the fund and shall adjust the amount, if necessary, to ensure the payment schedule is adequate to cover the costs of surveillance, monitoring, any required maintenance, and other care of the disposal site during the institutional control period. The amount may be adjusted to reflect inflation, changes in activities performed, and any other conditions affecting costs.

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Effective June 5, 1997

§336.740. Maintenance of Records and Reports.

(a) Each licensee shall maintain any records and make any reports as may be required by the conditions of the license, by the rules in this chapter, or by orders of the commission. Copies of any records or reports required by the license, rules, or orders shall be submitted to the executive director or commission on request. All records and reports required by the license, rules, or orders shall be complete and accurate.

(b) Records which are required by the rules in this chapter or by license conditions shall be maintained for a period specified by the appropriate rules or by license condition. If a retention period is not otherwise specified, these records shall be maintained and transferred to the executive director as specified in subsection (e) of this section as a condition of license termination unless the executive director otherwise authorizes their disposition.

(c) Each record required by this chapter shall be legible throughout the specified retention period. The record shall be the original or a reproduced copy or a microform, provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, shall include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and the loss of records.

(d) If there is a conflict between the commission's rules, license condition, or other written approval or authorization from the executive director pertaining to the retention period for the same type of record, the longest retention period specified takes precedence.

(e) Notwithstanding subsections (a) - (d) of this section, the licensee shall record the location and the quantity of wastes contained in the disposal site and shall transfer these records upon license termination to the executive director and to such other government agencies or officials as designated by the commission.

(f) Following receipt and acceptance of a shipment of waste, the licensee shall record the date that the shipment was received at the disposal facility; the date of disposal of the waste; a traceable shipment manifest number; a description of any engineered barrier or structural overpack provided for disposal of the waste; the location of disposal at the disposal site; the containment integrity of the waste disposal containers as received; any discrepancies between materials listed on the manifest and those received; the volume of any pallets, bracing, or other shipping materials, or of materials generated on site, that are contaminated and are disposed of as contaminated or suspect materials; and any evidence of leaking or damaged disposal containers or radiation or contamination levels in excess of limits specified in rules of the United States Department of Transportation or United States Nuclear Regulatory Commission. The licensee shall briefly describe any repackaging operations of any of the disposal containers included in the shipment, plus any other information required by the commission as a license condition. The licensee shall retain these records until the commission transfers or terminates the license that authorizes the activities described in this section.

(g) Each licensee authorized to dispose of waste received from other persons shall file a copy of its financial report or a certified financial statement annually with the executive director in order to update the information base for determining financial qualifications.

(h) Annual reports shall be submitted.

(1) Each licensee authorized to dispose of waste received from other persons under this subchapter shall submit annual reports to the executive director. Reports shall be submitted by the end of the first calendar quarter of each year for the preceding year.

(2) The annual reports shall include:

(A) specification of the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in airborne effluents during the preceding year;

(B) the results of the environmental monitoring program;

(C) a summary of licensee disposal unit survey and maintenance activities, including the location of each discrete waste shipment;

(D) a summary, by waste class, of activities and quantities of radionuclides disposed of;

(E) any instances in which observed site characteristics were significantly different from those described in the application for a license; and

(F) any other information the executive director may require.

(3) If the quantities of radioactive materials released during the reporting period, monitoring results, or maintenance performed are significantly different from those expected in the documents previously reviewed as part of the licensing action, the annual report shall cover this specifically.

(i) An electronic record keeping system shall be maintained.

(1) In addition to the other requirements of this section, the licensee shall store, or have stored, manifest and other information pertaining to receipt and disposal of radioactive waste in an electronic recordkeeping system.

(2) The manifest information that must be electronically stored is:

(A) that prescribed in §336.363, Appendix F, of this title (relating to Requirements for Receipt of Low-Level Radioactive Waste for Disposal at Licensed Land Disposal Facilities and Uniform Manifests), that is, the information requested on applicable United States Nuclear Regulatory Commission (NRC) Forms 540 (Uniform Low-Level Radioactive Waste Manifest (Shipping Paper)) and 541 (Uniform Low-Level Radioactive Waste Manifest (Container and Waste Description)) and, if necessary, on an applicable NRC Form 542 (Uniform Low-Level Radioactive Waste Manifest (Manifest Index and Regional Compact Tabulation)), as those forms and requirements are prescribed in 10 CFR 61.80 as amended through December 27, 1982 (47 FedReg 57463) and 10 CFR 20.2006 as amended through March 27, 1995 (60 FedReg 15663), with the exception of shipper and carrier telephone numbers and shipper and consignee certifications;

(B) that information required in subsection (f) of this section; and

(C) specification of:

(i) the activity of each of the radionuclides hydrogen-3, carbon-14, technetium-99, and iodine-129 in waste disposed of;

(ii) the masses of uranium-233, uranium-235, and plutonium in special nuclear material in waste disposed of; and

(iii) the mass of uranium and thorium in source material in waste disposed of.

(3) As specified in license conditions, the licensee shall report the stored information, or subsets of this information, on a computer-readable medium, as that term is defined in §336.363, Appendix F, of this title.

Adopted May 14, 1997

Effective June 5, 1997

§336.741. Tests At Land Disposal Facilities.

Each licensee shall perform or permit the executive director to perform any tests the executive director deems appropriate or necessary for the administration of the rules in this chapter, including tests of:

(1) wastes and facilities used for the receipt, storage, processing, handling, and disposal of wastes;

(2) radiation detection and monitoring instruments; and

(3) other equipment and devices used in connection with the receipt, possession, handling, processing, storage, or disposal of waste.

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Effective June 5, 1997

§336.742. Inspections of Land Disposal Facilities.

(a) Each licensee shall afford the executive director, at all reasonable times, opportunity to inspect waste not yet disposed of and the premises, equipment, operations, and facilities in which wastes are received, possessed, handled, processed, stored, or disposed of.

(b) Each licensee shall make available to the executive director for inspection, upon reasonable notice, records and reports maintained under the rules in this chapter, the conditions of the license, or orders of the commission. Authorized representatives of the executive director may copy and take away copies of, for the executive director's use, any record or report required to be kept pursuant to the rules in this chapter, the conditions of the license, or orders of the commission.

Adopted May 14, 1997

Effective June 5, 1997

§336.743. Resident Inspector.

The commission may require at any disposal site that the licensee provide facilities for a resident inspector who is employed by the commission. The licensee shall reimburse the commission for the salary and other expenses of the inspector, as provided in Subchapter B of Chapter 336 of this title (relating to Radioactive Substance Fees).

Adopted May 14, 1997

Effective June 5, 1997